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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,730	06/13/2005	Olivier Guerret	FR-AM1907 NP	6786
31684	7590	02/19/2010	EXAMINER	
ARKEMA INC. PATENT DEPARTMENT - 26TH FLOOR 2000 MARKET STREET PHILADELPHIA, PA 19103-3222			BERNSHTEYN, MICHAEL	
			ART UNIT	PAPER NUMBER
			1796	
			NOTIFICATION DATE	DELIVERY MODE
			02/19/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/538,730

Applicant(s)

GUERRET, OLIVIER

Examiner

MICHAEL M. BERNSTEYN

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4, 7, 9-11, 13 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 7, 9, 10, 13 and 17-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action follows a response filed on October 21, 2009. Claims 1 and 7 have been amended; claims 5 and 6 have been cancelled; no claims have been added.
2. Claims 1, 2, 4, 9-11, 13 and 17-21 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 2, 4, 9-11, 13 and 17-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Newly amended claims 1 and 7 recite the limitation "...wherein said hydrophilic monomer is selected from the group consisting of ethylenic carboxylic acids, acrylic acid, methacrylic acid, itaconic acid, fumaric acid; and acrylates and methacrylates of polyethylene glycol or of glycol which are or are not substituted on their end functional group by alkyl, phosphate, phosphonate or sulfonate groups; wherein the monomer M₁ is selected from the group of monomers consisting of: linear or branched C₁-C₁₂ alkyl acrylates, polyethylene glycol acrylate, polyethylene glycol (meth)acrylate, dienes, butadiene and isoprene; and wherein M₂ is selected from one or more monomers selected from the group consisting of styrene, styrene derivatives, (meth)acrylic monomers, norbornyl acrylate, methyl methacrylate, acrylonitrile and methacrylonitrile."

It seems that the second part of claims 1 and 7 contradict the first part of the claims because of the following. The above mentioned second part of claims 1 and 7 recite the species of monomers M_1 and M_2 which are not hydrophilic but hydrophobic, such as linear or branched C_1 - C_{12} alkyl acrylates, dienes, butadiene and isoprene for M_1 and styrene derivatives, norbornyl acrylate, methyl methacrylate, acrylonitrile and methacrylonitrile for M_2 . Therefore none of M_1 and M_2 is a hydrophilic monomer while the first part of claims 1 (line 7) and 7 (line 9) contains the limitation "at least one of the monomers being hydrophilic".

Claim Rejections - 35 USC § 102

4. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.

Claim Rejections - 35 USC § 103

5. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.

6. Claims 1, 2, 4 and 18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Matyjaszewski et al. "Gradient copolymers by atom transfer radical polymerization", *J. Phys. Org. Chem.*, 2000, **13**, p. 775-786, for the rationale recited in paragraph 7 of Office Action dated July 22, 2009, and comments below.

7. Claim 7, 9, 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matyjaszewski et al. as applied to claims 1, 2, 4 and 18 above, and further in view of Farcet et al. "Nitroxide-mediated miniemulsion polymerization of n- butyl acrylate: synthesis of controlled homopolymers and gradient copolymers with styrene", *Macromolecular Symposia* (2002), 182, (3rd IUPAC-Sponsored International Symposium on Free-Radical Polymerization: Kinetics and Mechanism), 2001, 249-260 (see SRNT dated on September 19, 2007, pages 48-49), for the rationale recited in paragraph 8 of Office Action dated July 22, 2009, and comments below.
8. Claims 13 and 21 are rejected under 35 U.S.C.102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Matyjaszewski et al. "Gradient copolymers by atom transfer radical polymerization", *J. Phys. Org. Chem.*, 2000, **13**, p. 775-786, as applied to claims 1, 2, 4-6 and 18 above, and further in view of Matyjaszewski et al. (U. S. Patent 5,807,937), for the rationale recited in paragraph 9 of Office Action dated July 22, 2009, and comments below.
9. Claims 1,2, 4, 7, 9, 10, 13 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Nesvadba et al. (U.S. Patent 6,262,206), for the rationale recited in paragraph 3 of Office Action dated October 4, 2007, and comments below.
10. Claim 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nesvadba et al. (U.S. Patent 6,262,206), for the rationale recited in paragraph 6 of Office Action dated March 26, 2008, and comments below.

11. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, for rationale recited in paragraph 17 of Office Action dated September 8, 2008.

Response to Arguments

12. Applicant's arguments filed October 21, 2009 have been fully considered but they are not persuasive.

13. It appears that the focal Applicants argument resides in the in the contention that the Matyjaszewski's reference provides a list of monomers copolymerizable with styrene - a few being hydrophilic, but none being even generally from the list of Applicant's amended claims and the Matyjaszewski reference is silent on requiring a hydrophilic monomer, and is silent on the level of hydrophilic monomer that must be present (page 7 the last paragraph).

It is noted that Matyjaszewski clearly exemplifies the simultaneous radical copolymerization of styrene and n-butyl acrylate, and methyl methacrylate and n-butyl acrylate in bulk at 90-110°C, which is within the claimed range (pages 780-781, Fig. 5-7). N--butyl acrylate directly belongs to list of Applicant's amended claims 1 and 7, such as "wherein the monomer M₁ is selected from the group of monomers consisting of: linear or branched C₁-C₁₂ alkyl acrylates".

Matyjaszewski also exemplifies (see p.780, Fig. 5) that the level of hydrophilic monomer that must be present is more than the claimed 5%, which is clearly within the

claimed range. Therefore it is the Examiner position that Matyjaszewski's reference anticipates the claimed invention.

14. In response to Applicants arguments that the Matyjaszewski's reference does show gradient copolymers, including the styrene/acrylonitrile (example, page 783, Figure 3) but however, neither styrene nor acrylonitrile is a hydrophilic monomer, thus fails to meet that claim element, and that except that every example in the Matyjaszewski reference contains ZERO hydrophilic monomer (page 7, the last paragraph), it is noted that "an applied reference may be relied upon for all that it would have reasonably suggested to one of ordinary skill in the art, including not only preferred embodiment, but less preferred and even non preferred". *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989).

15. In response to Applicants arguments that the the Farcet reference also fails to teach or suggest a required specific hydrophilic monomer at the level required by Applicant's claims, as amended, and therefore fails to heal the deficiencies of the Matyjaszewski reference (page 8, 2nd paragraph), it is noted that the second reference does not contain all the limitations of the claim 1, and it was used in the rejection of claims 7, 9, 10 and 20 under 35 U.S.C. 103(a) only to describe the usage of the claimed nitroxide species comprising a phosphonate group and alkoxyamine.

Furthermore it is worth to mention that Farcet discloses that a controlled free-radical homopolymerization of butyl acrylate and its copolymerization with styrene have been studied in aqueous miniemulsion, using an acyclic 13-phosphonylated nitroxide as

a mediator, the N-tert- butyl-N-(l-diethylphosphono-2,2-dimethylpropyl) nitroxide, also called SG1, and alkoxyamine. Polymerization kinetics have been studied and characterization of the (co)polymers has been performed, demonstrating the successful synthesis of well-defined poly(butyl acrylate) homopolymers and poly(butyl acrylate-co-styrene)gradient copolymers (abstract).

16. In response to Applicants arguments that the Examiner is confusing the polymerization of monomers in water or organic solvent, with the property of the gradient copolymer itself being soluble in water or organic solvent at a concentration greater than or equal to 5% (page 9, 1st paragraph), and that there is no teaching or suggestion of a gradient copolymer that requires at least two different monomers, with at least 50% by weight having a Tg <20°C, and a monomer having a Tg >20°C, where at least 10% is a hydrophilic monomer, at the right Mn and Mw, and using the specific monomers of Applicant's amended claims (page 9, 3rd paragraph), it is noted the following.

The most claims recite the copolymer (claims 1, 2, 4-6, 13, 17-19 and 21), not the process. Nevertheless, it is noted that Nesvadba clearly discloses that the present invention encompasses in the synthesis novel gradient copolymers (col. 12, lines 56-59). It is well settled that "an applied reference may be relied upon for all that it would have reasonably suggested to one of ordinary skill in the art, including not only preferred embodiment, but less preferred and even non preferred". *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989).

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MICHAEL M. BERNSHTEYN** whose telephone number is (571)272-2411. The examiner can normally be reached on M-Th 8-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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